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ATTACHED: - BRIEF ON APPEAL - (17 pages);
- FEE TRANSMITTAL, PTO/SB/17, (in duplicate).

CUSTOMER NO.:	24498
Serial No.:	10/525,921
Docket No.:	PU020400
Art Unit:	2188
Examiner:	Kenneth M. Lo

TOTAL NUMBER OF PAGES INCLUDING THIS SHEET: 20

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FEE TRANSMITTAL
for FY 2007

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 510.00

Complete if Known	
Application Number	10/525,921
Filing Date	February 25, 2005
First Named Inventor	Steven Brian Rosk
Examiner Name	Kenneth M. Lo
Art Unit	2188
Attorney Docket No.	PU020400

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METHOD OF PAYMENT *(check all that apply)* **CUSTOMER NUMBER: 24498**

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FEE CALCULATION (All the fees below are due upon filing or may be subject to a surcharge.)

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

	FILING FEES		SEARCH FEES		EXAMINATION FEES		
		Small Entity		Small Entity		Small Entity	
Application Type	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fee ($)	Fees Paid ($)
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Small Entity Fee ($)	Small Entity Fee ($)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims		Extra Claims	Fee ($)	Fee Paid ($)
_____	- 20 or HP =	_____	x _____	= _____

HP = highest number of total claims paid for, if greater than 20.

Independent Claims		Extra Claims	Fee ($)	Fee Paid ($)
_____	- 3 or HP =	_____	x _____	= _____

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims	
Fee ($)	Fee Paid ($)
_____	_____

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets		Extra Sheets		Number of each additional 50 or fraction thereof		Fee ($)	Fee Paid ($)
_____	- 100 =	_____	/ 50 =	_____	(round up to a whole number) x	_____	= _____

4. OTHER FEE(S)

	Fees Paid ($)
Non-English Specification, $130 fee (no small entity discount)	
Other (e.g., late filing surcharge): **APPEAL BRIEF - $510.00**	$510.00

SUBMITTED BY

Name (Print/Type)	ROBERT B. LEVY	Registration No. (Attorney/Agent)	28,234	Telephone	(609) 734-6820
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CUSTOMER NO.: 24498
Serial No.: 10/525,921
Notice of Appeal dated: 10/17/07

PATENT
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
Before the Board of Patent Appeals & Interferences

Applicants:	Steven Brian Rosker, et al.	:	Examiner: Kenneth M. Lo
Serial No:	10/525,921	:	Group Art Unit: 2188
Filed:	February 25, 2005	:	

For: VIDEO-STORAGE NETWORK HAVING INCREASED PERFORMANCE

BRIEF ON APPEAL

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

May It Please The Honorable Board:

Applicants appeal the status of Claims 1-16 as presented in response to the Office Action dated March 28, 2007, and finally rejected in the Office Action dated July 18, 2007, pursuant to the Notice of Appeal filed on October 17, 2007, and submit this Appeal Brief.

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Serial No.: 10/525,921
Notice of Appeal dated: 10/17/07

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CUSTOMER NO.: 24498 **PATENT**
Serial No.: 10/525,921 **PU020400**
Notice of Appeal dated: 10/17/07

1. **Real Party in Interest**

The real party in interest is Thomson Licensing, the assignee of the entire right title and interest in and to the subject application by virtue of an assignment recorded with the Patent Office on January 20, 2006 at reel/frame 017204/0198.

2. **Related Appeals and Interferences**

None.

3. **Status of Claims**

Claims 1-16 are pending. Claims 1-16 stand rejected and are under appeal.
A copy of the claims 1-16 is presented in Section 8 below.

4. **Status of Amendments**

A Preliminary Amendment was entered on February 25, 2006. An Amendment Under 37 CFR §1.111, sent to the PTO on June 7, 2007 in response to the non-final Office Action dated March 28, 2007, was entered. An Amendment Under 37 C.F.R. §1.116, sent to the USPTO on September 14, 2007 in response to the Final Office Action dated July 18, 2007, was also entered. No Responses/Amendments were filed subsequent to the Amendment sent on September 14, 2007.

5. **Summary of Claimed Subject Matter**

Claim 1 is directed to a storage system, comprising: a storage mechanism (see, e.g., element 12, FIG. 1) for storing content (see, e.g., p. 2, lines 26-28); at least one local cache storage unit (see, e.g., element 14, FIG. 1) for mirroring at least a portion of the content stored on the storage mechanism (see, e.g., p. 3, lines 3-4; p. 3, lines 24-30); a write director (see, e.g., element 16, FIG. 1) coupled to the storage mechanism and to the at least one local storage cache for controlling content written into the storage mechanism and to the at least one local storage cache (see, e.g., p. 3, lines 11-16); a cache manager (see, e.g., element 18, FIG. 1) for managing content copying between the storage mechanism and the at least one

local storage cache to maintain at least partial content coherency (see, e.g., p. 3, line 21 to p. 4, line 5); a read director (see, e.g., element 20, FIG. 1) responsive to a request for content from a user for directing said content request to a selected one of the at least one local storage cache and the storage mechanism depending on content availability of each (see, e.g., p. 4, lines 6-17); and a storage mechanism access manager (see, e.g., element 17, FIG. 1) for monitoring read and write loading of the storage mechanism (see, e.g., p. 3, lines 15-16) and for controlling the read and write directors and the cache manager in accordance with the storage mechanism read and write loading (see, e.g., p. 3, lines 17-20; p. 4, lines 21-22; p. 4, lines 24-28), wherein controlling the write directors includes reducing writing to the storage mechanism (see, e.g., original claim 10).

Claim 3 is directed to the system of claim 1, further comprising a filler storage unit (see, e.g., element 24, FIG. 1) for storing filler content, and wherein the read director directs the read request to the filler storage unit to provide filler content when the requested content is unavailable from the local storage cache unit and insufficient bandwidth exists to access the storage mechanism (see, e.g., p. 4, lines 14-17).

Claim 11 is directed to a method for storing content, comprising the steps of: writing incoming content to at least one of a Storage Area Network (storage mechanism) and a local cache storage unit (see, e.g., p. 3, lines 11-20); monitoring content coherency between the storage mechanism and the local cache storage unit (see, e.g., p. 3, lines 21-26); copying content between the storage mechanism and the local cache storage unit in accordance with the content coherency therebetween (see, e.g., p. 3, lines 21-31); directing a request for content from a user to a selected one of the storage mechanism and the local cache storage unit depending on the content availability of each (see, e.g., p. 4, lines 6-17); monitoring read and write loading of the storage mechanism (see, e.g., p. 3, lines 15-16); and controlling reading of content from, and writing of content to the storage mechanism in accordance with the storage mechanism read and write loading (see, e.g., p. 4, lines 21-22; p. 4, lines 26-28), wherein controlling includes reducing writing to the storage mechanism (see, e.g., original claim 10).

Claim 13 is directed to the method of claim 11, wherein the step of directing the content request further comprises re-directing the content request to a filler storage unit to provide filler content if the requested content does not reside at the local cache storage unit and insufficient bandwidth exists to access the storage mechanism (see, e.g., p. 4, lines 14-17).

6. Grounds of Rejection to be Reviewed on Appeal

Claims 1, 2, 4-12, 15 and 16 stand rejected under 35 U.S.C. §102(e) as being anticipated by Chiou et al. (U.S. Patent No. 6,792,507) (hereinafter 'Chiou').

Claims 3, 13 and 14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chiou in view of Tremblay et al. (U.S. Publication No. 2002/0184460 A1) (hereinafter 'Tremblay').

Regarding the grouping of the claims, claims 2 and 4-10 stand or fall with claim 1, due to their respective dependencies. In addition, claims 12 and 15 stand or fall with claim 11, due to their respective dependencies. Further, although claim 3 may be allowed concurrently with claim 1, claim 3 may only fall by itself. Similarly, although claim 13 may be allowed concurrently with claim 11, claim 13 may only fall by itself. Additionally, claim 14 stands or falls with claim 13.

7. Argument

A. Introduction

In general, the present principles are directed to a system and method for dynamically managing access to a cached storage system operating under bandwidth constraints. Prior art methods cope with bandwidth constraints by restricting the number of users that may access a storage system (see Specification, p. 1, lines 16-26). Aspects of the present principles offer a more efficient means of managing bandwidth constraints by monitoring the read and write loading on a main storage mechanism and reducing writing to the storage mechanism during intervals of high demand, regardless of the number of users accessing it (see Specification, p. 3, line 15; p. 4, lines 21-22; p. 4, lines 26-28; original claim 10). In addition, another beneficial feature of the present principles includes providing a user with filler content when requested

content is unavailable from a main storage mechanism or a local cache (see Specification, p. 4, lines 14-17).

The feature of reducing writing to a storage mechanism in accordance with storage mechanism read and write loading is included in independent claims 1 and 11 and is not taught by any of the references cited by the Examiner. Moreover, dependent claims 3 and 13 comprise the feature of providing filler content in lieu of requested content that is unavailable, which is also not disclosed or rendered obvious by any of the cited references. It is respectfully submitted that the claims are patentably distinct and non-obvious over the cited references for at least these reasons. As such, claims 1, 3, 11 and 13 are presented for review in this appeal.

B. Whether Claim 1 is Unpatentable Under 35 U.S.C. 102(e) Over Chiou.

B1. Claim 1 is patentable over Chiou, as Chiou fails to anticipate the feature of reducing writing on a storage mechanism in accordance with read and write loading on the storage mechanism.

Because Chiou fails to disclose reducing writing to a storage mechanism in accordance with read and write loading, claim 1 is not anticipated under 35 U.S.C. 102(e). "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single or prior art reference" (MPEP §2131, quoting *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)). As discussed above, aspects of the present principles include managing bandwidth constraints by monitoring the read and write loading on a main storage mechanism and reducing writing to the storage mechanism during intervals of high demand. Some of these features are recited in claim 1:

> "a storage mechanism access manager for monitoring read and write loading of the storage mechanism and for controlling the read and write directors and the cache manager in accordance with the storage mechanism read and write loading, wherein controlling the write directors includes reducing writing to the storage mechanism".

Chiou fails to set forth, either expressly or inherently, the feature of reducing writing to a storage mechanism in accordance with monitored read and write loading on the storage mechanism, as recited in claim 1. Chiou discloses a system and method for reducing network

congestion by strategically positioning caches near a plurality of client devices so that data transmission between distant points on a network is avoided (see generally Chiou, FIG. 1; column 2 line 46 to column 3, line 35). Clients may access a main storage mechanism when requested data is not located on the caches (see Chiou, column 3, lines 9-12). Chiou nowhere discloses that its system monitors read and write loading on the storage mechanism and reduces writing to the storage mechanism accordingly based on the read and write loading.

In the Chiou system, data is written to the main storage mechanism in accordance with one of two modes: a critical coherent mode and a non-critical coherent mode. The two modes differ in the order in which data is written to the caches and the main storage device. For example, in the critical coherent mode, the caches are updated prior to writing the data to the main storage device (Chiou, column 15, lines 3-5). Conversely, in the non-critical coherent mode, data is written to the main storage device before the caches are updated (Chiou, column 15, lines 5-7).

Although Chiou describes changing the order in which data is written to the main storage device and the caches, Chiou does not disclose that writing to the main storage device is reduced upon switching modes. The Chiou system is dynamic in that several different users may write to the storage device at any time. Simply changing the order in which data is written with respect to each user does not ensure that writing to the storage mechanism is reduced.

Moreover, even if switching modes somehow reduced writing to the storage mechanism, switching between modes is not done in accordance with read and write loading on the main storage mechanism. Chiou teaches that a user should select the coherency mode based upon the type of files stored. For example, Chiou states that in web page servers where stale reads of web pages are not critical to a web page viewer, the non-critical mode should be selected (see Chiou, column 9, lines 22-35). Thus, in the Chiou system, a user selects the coherency mode in accordance with file type and criticality of cache/main storage device coherence. Chiou does not disclose or suggest monitoring the read and write load on a storage mechanism and choosing a coherent mode in accordance with the storage mechanism read and write loading.

Thus, claim 1 is patentable over Chiou at least because Chiou fails to disclose reducing writing to a storage mechanism in accordance with the storage mechanism read and write loading. Therefore, claim 1 is patentable over Chiou. Moreover, claims 2 and 4-10 are

patentable over Chiou due at least to their dependencies on claim 1. Withdrawal of the rejections is respectfully requested.

C. Whether Claim 11 is Unpatentable Under 35 U.S.C. 102(e) Over Chiou.

C1. Claim 11 is patentable over Chiou, as Chiou fails to anticipate the feature of reducing writing on a storage mechanism in accordance with read and write loading on the storage mechanism.

Because Chiou does not disclose the feature of reducing writing to a storage device in accordance with read and write loading on the storage mechanism, claim 11 is not anticipated under 35 U.S. C. 102(e). "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single or prior art reference" (MPEP §2131, quoting *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)). Claim 11 includes, inter alia:

> monitoring read and write loading of the storage mechanism; and
> controlling reading of content from, and writing of content to the storage mechanism in accordance with the storage mechanism read and write loading, wherein controlling includes reducing writing to the storage mechanism.

As discussed above with regard to claim 1, Chiou fails to disclose reducing writing to a storage mechanism in accordance with the storage mechanism read and write loading. Thus, claim 11 is patentable over Chiou because Chiou fails to anticipate features of the claim. Furthermore, claims 12 and 15-16 are also patentable over Chiou due at least to their dependencies on claim 11. Withdrawal of the rejection is respectfully requested.

D. Whether Claim 3 is Unpatentable Under 35 U.S.C. 103(a) Over Chiou in view of Tremblay.

D1. Claim 3 is patentable over Chiou in view of Tremblay, as neither reference renders obvious the feature of providing filler content as a substitute for real data.

Claim 3 is patentable due at least to its dependency on claim 1. In addition, claim 3 is also patentable because Chiou and Tremblay, taken singly or in combination, fail to disclose or render obvious the feature of providing filler data in lieu of real data. "To establish prima

facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art" (MPEP §2143.03, citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)). Claim 3 includes, inter alia:

> a filler storage unit for storing filler content, and wherein the read director directs the read request to the filler storage unit to provide filler content when the requested content is unavailable from the local storage cache unit and insufficient bandwidth exists to access the storage mechanism.

Thus, claim 3 includes the aspect of providing filler content as a substitute for real data.

The Examiner has admitted that Chiou fails to disclose the above quoted features of claim 3 (see Final Office Action, p. 12). Moreover, Tremblay fails to disclose or render obvious the feature of providing filler content as a substitute for real data. Tremblay discloses a method and apparatus for writing data into memory by combining data from a plurality of write transactions and writing data to memory in one write transaction (Tremblay, Abstract). Data is written into a storage device by employing memory store instructions. Tremblay states that in one embodiment of its system, "the format of the memory store instruction . . . includes: (1) a write command; (2) four beats of data (corresponding to a full cache line); (3) byte enable information specifying which or how many of the bytes in the four beats of data are to be actually written in memory; and (4) the address in main memory at which the specified bytes are to be written." (Tremblay, paragraph 23) (emphasis added).

Tremblay's method and system may be directed to "store pair instructions," which specify that one beat of data is written in main memory (Tremblay, paragraph 26). The store pair instruction includes: "(1) a write command to write data in main memory; (2) one beat of data to be written in main memory and three beats of unused or filler data; (3) byte enable information specifying which bytes of the one beat of data is to be actually written in memory; and (4) the address in main memory at which the specified bytes of the one beat are to be written." (Tremblay, paragraph 27) (emphasis added).

The three beats of filler data disclosed in Tremblay are used merely to follow the general format of having total four beats of data in a memory store instruction. The filler data is not used as a substitute for real data. The data in the store pair instruction is complete before the addition of filler data. Thus, the filler data is not used in lieu of missing or unavailable data. Accordingly, the filler data employed in Tremblay does not substitute real data.

As recited in claim 3, filler content in accordance with aspects of the present principles is provided in response to a read request for content if the cache does not contain the content and there is insufficient bandwidth to access the storage mechanism. The filler content is used as a substitute for real data, as it is provided in lieu of missing or unavailable content. Accordingly, claims 3 is patentably distinguished from Tremblay at least because Tremblay fails to disclose using filler content as a substitute for real data. Withdrawal of the rejection is respectfully requested.

E. Whether Claim 13 is Unpatentable Under 35 U.S.C. 103(a) Over Chiou in view of Tremblay.

E1. Claim 13 is patentable over Chiou in view of Tremblay, as neither reference renders obvious the feature of providing filler content as a substitute for real data.

Claim 13 is patentable due at least to its dependency on claim 11. Furthermore, claim 13 is also patentable because Chiou and Tremblay, taken singly or in combination, fail to disclose or render obvious the feature of providing filler data in lieu of real data. "To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art" (MPEP §2143.03, citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)). Claim 13 includes, inter alia:

> "re-directing the content request to a filler storage unit to provide filler content if the requested content does not reside at the local cache storage unit and insufficient bandwidth exists to access the storage mechanism."

Thus, claim 13 includes the feature of providing filler content as a substitute for real data. As discussed above with regard to claim 3, Chiou and Tremblay, taken singly or in combination, fail to render the feature of providing filler content as a substitute for real data. Accordinly, claim 13 is patentable over Chiou in view of Tremblay. Moreover, claim 14 is also patentable over the cited references due at least to its dependency on claim 13. Withdrawal of the rejections is respectfully requested.

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F. **Conclusion**

At least the above-identified limitations of the pending claims are not disclosed or rendered obvious by the teachings of Chiou and/or Tremblay. Accordingly, it is respectfully requested that the Board reverse the rejection of claims 1-16 under.

Please charge the amount of $510.00, covering fee associated with the filing of the Appeal Brief, to **Thomson Licensing LLC, Deposit Account No. 07-0832**. In the event of any non-payment or improper payment of a required fee, the Commissioner is authorized to charge **Deposit Account No. 07-0832** as required to correct the error.

Respectfully submitted,
STEVEN BRIAN ROSKER ET AL.

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8. CLAIMS APPENDIX

1. (Previously presented) A storage system, comprising:

a storage mechanism for storing content; at least one local cache storage unit for mirroring at least a portion of the content stored on the storage mechanism;

a write director coupled to the storage mechanism and to the at least one local storage cache for controlling content written into the storage mechanism and to the at least one local storage cache;

a cache manager for managing content copying between the storage mechanism and the at least one local storage cache to maintain at least partial content coherency;

a read director responsive to a request for content from a user for directing said content request to a selected one of the at least one local storage cache and the storage mechanism depending on content availability of each; and

a storage mechanism access manager for monitoring read and write loading of the storage mechanism and for controlling the read and write directors and the cache manager in accordance with the storage mechanism read and write loading, wherein controlling the write directors includes reducing writing to the storage mechanism.

2. (Original) The storage system of claim 1 wherein the cache manager manages the storage capacity of the local cache storage unit by successively deleting a least accessed file until the local cache storage unit has an available storage capacity above a prescribed level.

3. (Previously presented) The storage system of claim 1 further comprises a filler storage unit for storing filler content, and wherein the read director directs the read request to the filler storage unit to provide filler content when the requested content is unavailable from the local storage cache unit and insufficient bandwidth exists to access the storage mechanism.

4. (Original) The storage system of claim 1 wherein the storage mechanism further comprises at least one disk drive.

5. (Original) The storage system of claim 1 wherein the storage mechanism further comprises at least one Redundant Array of Inexpensive Disk Drives (RAID).

6. (Original) The storage system of claim 1 wherein the local cache storage unit further comprises at least one disk drive.

7. (Original) The storage system of claim 1 wherein the local cache storage unit further comprises at least one Redundant Array of Inexpensive Disk Drives (RAID).

8. (Previously presented) The storage system according to claim 1 wherein the read director redirects a request for content to the local cache storage unit when the requested content is available at the local cache storage unit to reduce bandwidth requirements on the storage mechanism.

9. (Original) The storage system according to claim 1 wherein the cache manager copies at least some content from the storage mechanism to the local cache storage unit previously unavailable on the local cache storage unit.

10. (Original) The system according to claim 1 wherein the storage mechanism access manager controls the read and write directors to reduce reading from, and writing to the storage mechanism during intervals of limited storage mechanism bandwidth.

11. (Previously presented) A method for storing content, comprising the steps of:

writing incoming content to at least one of a Storage Area Network (storage mechanism) and a local cache storage unit;

monitoring content coherency between the storage mechanism and the local cache storage unit;

copying content between the storage mechanism and the local cache storage unit in accordance with the content coherency therebetween

directing a request for content from a user to a selected one of the storage mechanism and the local cache storage unit depending on the content availability of each,

monitoring read and write loading of the storage mechanism; and

controlling reading of content from, and writing of content to the storage mechanism in accordance with the storage mechanism read and write loading, wherein controlling includes reducing writing to the storage mechanism.

12. (Original) The method according to claim 11 wherein the step of directing the content request further comprises re-directing the content request to the local cache storage unit if the requested content resides at the local cache storage unit.

13. (Previously presented) The method according to claim 11 wherein the step of directing the content request further comprises re-directing the content request to a filler storage unit to provide filler content if the requested content does not reside at the local cache storage unit and insufficient bandwidth exists to access the storage mechanism.

14. (Previously presented) The method according to claim 13 further comprising the step of writing content from the storage mechanism to the local cache storage unit.

15. (Original) The method according to claim 11 further comprising the step of writing content from the local cache storage unit to the storage mechanism.

16. (Original) The method according to claim 11 wherein the step of controlling reading of content from, and writing of content to the storage mechanism further comprises the step of restricting access to the storage mechanism during intervals of high bandwidth demand.

9. RELATED EVIDENCE APPENDIX

None.

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10. RELATED PROCEEDINGS APPENDIX

None